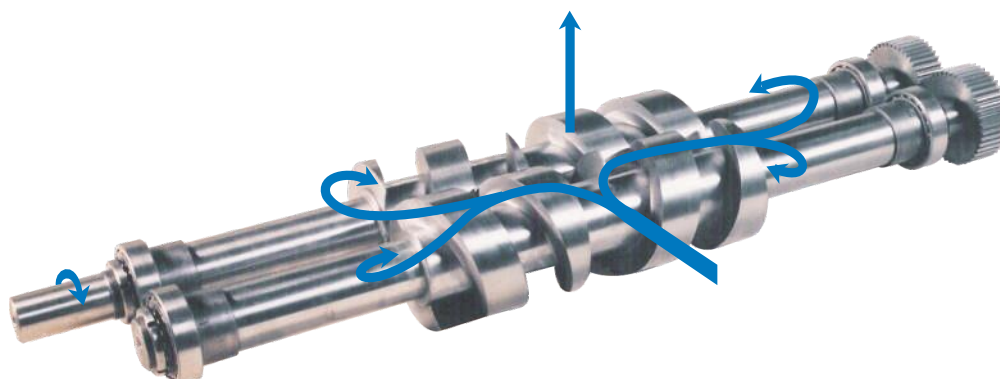


Twin Screw Range of Pumps

Pumping Principle



The working principle of Roto gear timed Dual-Flow Twin Screw Pumps is dependent on the rotation of two screw spindles in closed compartment. Wherein a pre-defined clearance is maintained between the screw spindles as well as between the outside diameter of the screw spindles and the bore of the casing/liner in which the screw spindles are located. Each half of the screw spindles is left-handed and right-handed. Thus when the spindles start rotating, driven by a pair of timing-gears located at the end of the screw spindles, the liquid is drawn towards the end of the screw spindles and entrapped between the bore of the pumping compartment as well as the flanks of the screws and is then propelled axially from both the ends towards the centre. Such a dual flow nullifies the axial thrust completely thereby enabling the screw spindles to remain in a state of hydraulic balance. Roto's unique double profile of the screw spindles contributes to a higher volumetric efficiency, thus an improved overall efficiency.

Salient Characteristics

- Long and trouble-free service life
 - Due to absence of metal to metal contact between the pumping elements. Can even run dry for limited period of time
- No axial thrust
 - Dual flow of liquid in opposite direction balances axial thrust
- Higher volumetric efficiency
 - Due to special double profile of screw flanks
- High cavitation free suction lift
 - Due to low NPSH[®]
- Self-priming and capable of handling entrapped air/vapour/gas
 - Due to positive displacement action and being inherently self-priming
- Uniform metered flow
 - Being a positive displacement pump, head developed is independent of speed and capacity is approximately proportional to speed
- Capable of handling wide variety of Fluids
 - Clear lubricating/non-lubricating as well as aggressive liquids can be handled due to choice of different designs and material of construction
- Safe to operate
 - Has in-built relief valve designed to bypass up to 100% capacity
- Wider conformity to API 676, 3rd edition
- Products are ATEX & CE Certified

International Quality



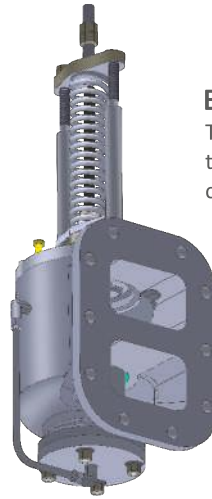
Continuous investments in precision measuring instruments, state-of-the-art testing facility and a dedicated team of engineers are testimony to Roto's commitment to maintain and constantly upgrade the quality of its products. The system of quality assurance at Roto guarantees compliance with numerous national/International standards. The manufacturing units are certified for conformance to the ISO 9001-2008 quality surveillance systems.



CERTIFICATE NO. 20002501QM08 ISO 9001-2008



Twin Screw Range of Pumps



Built in Safety Relief Valve

To prevent the excessive pressure built up in the system, the built in safety relief valve is capable of 100% bypassing of fluid.

Robust Pump Housing

The pump housing are available in casted or fabricated options. The casings are designed to take care of the flange loads. The suction flange and the casing offer minimum resistance to the flow of liquid thus minimising the NPSH requirements within the pump.

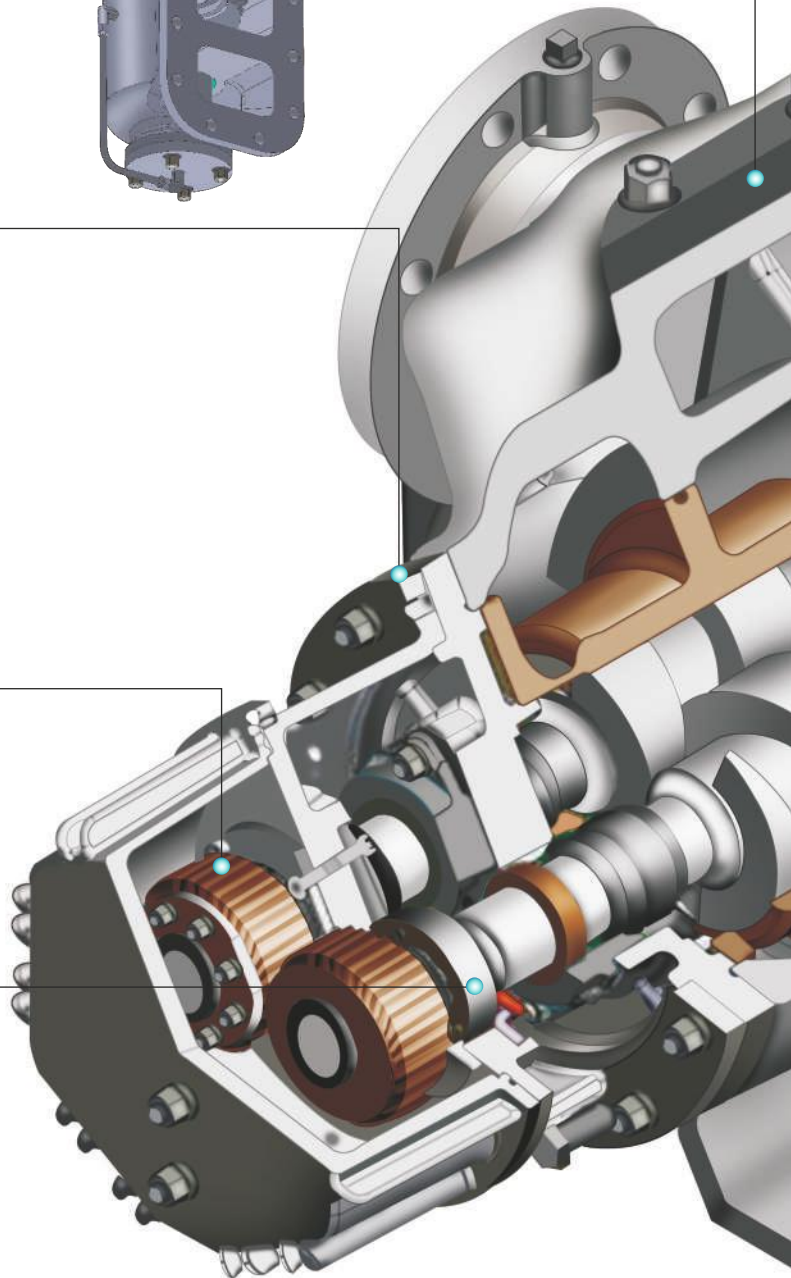
Standard Pump casing are foot mounted and non jacketed. Options are available for centre line mounting, sump heated and steam jacketed.

Timing Gear

Timing gear are housed in the gear box. The gear are hardened steel spur gears which are capable of transmitting higher torque and also maintain the clearances between the two screws resulting into longer service life. The gears are oil lubricated and away from the pumping liquid.

Spherical Roller Bearings

Fitted at both the ends, they are well suited for radial and axial loads arising out of Hydraulic pressure. And can also take care of the misalignments arising due to unforeseen working conditions at site.



Industries Served

Petrochemicals & Refinery, Oil Exploration, Oil Distribution Depots, Bunkering Stations, Power Plants, Marine & Ship Building, Sugar, Steel Plants, Paper, Liquid Terminals, Bulking Stations, Man made fibre, Paint, Fertilizer, Food Processing, Edible Oil, Cosmetics, Soap & Detergent, Distillation Plants, Mineral Processing etc.

Fluids Handled

Fuel Oil, LSHS, HPS, RFO, Crude Oil, Vacuum Residue, Slack Wax, Bitumen, Mineral Oil, Turbine Oil, Hydraulic Oil, LDO/HSD, Kerosene Oil, Avcat Fuel Oil, Naptha, Lubricating Oils, Fire Fighting Foam Solutions, Molasses, Black Liquor, Polymeric Resins, Paints, Lacquers, Plasticisers, Cosmetic Creams, Detergents, Soaps, Glucose, Jelly, Fats, Creams, Chocolate, Palm Oil, Alcohols, Esters, Viscose, Vegetable Oil, Caustic Lye, Asphalt etc.

Material Of Construction

Housing Components : Cast Iron, Cast Steel, Cast Stainless Steel

Liner : Cast Iron, Cast Stainless Steel

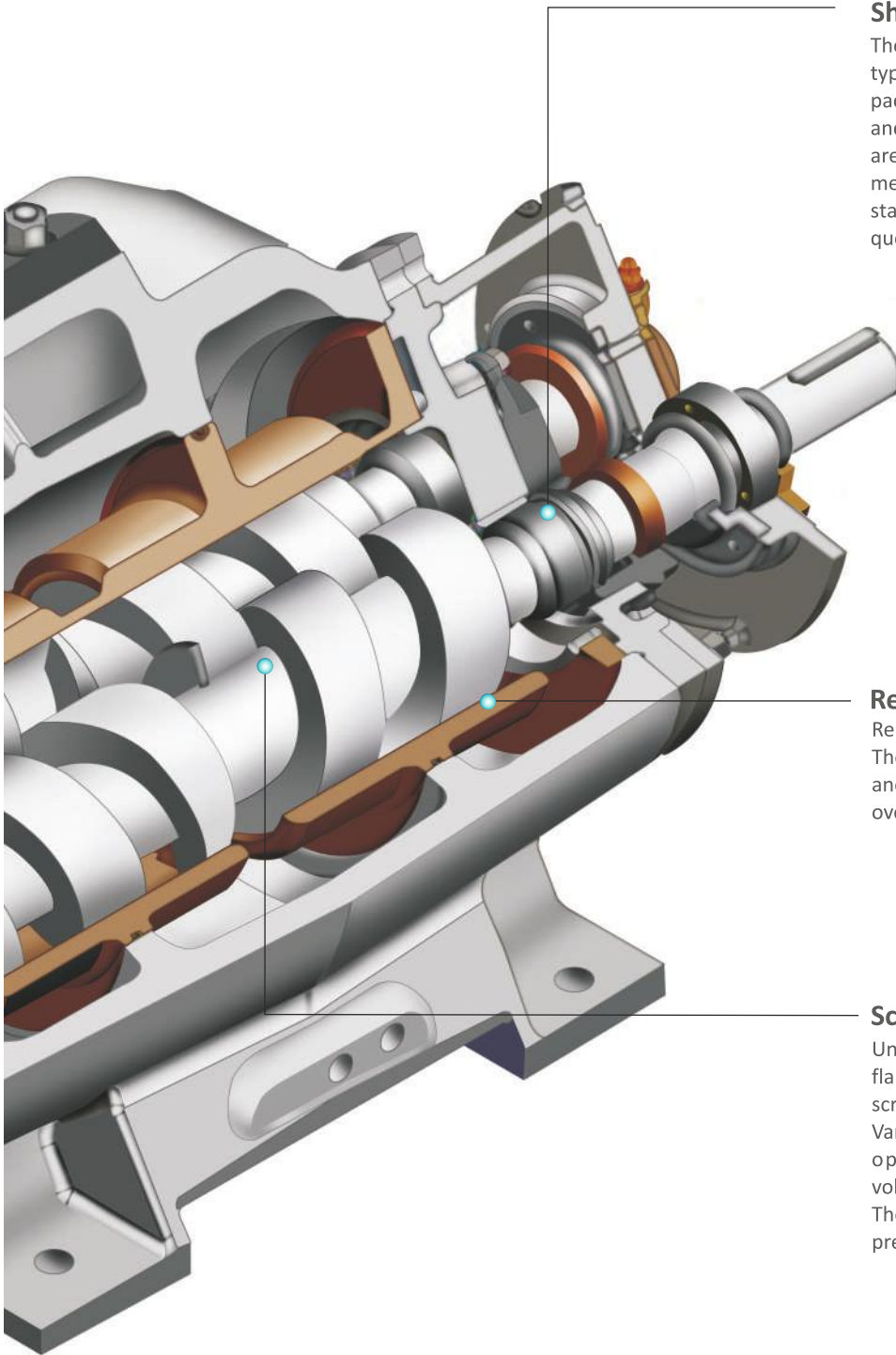
Screws : Alloy Steel, Nitrided Steel & Stainless Steel

Timing Gears : EN 36/EN 24

Gear Box : Cast Iron, Aluminium

Special Execution : In addition to the material construction listed above, Roto Twin Screw Pumps can also be supplied with pump body in welded steel construction along with renewable liners of suitable material. For abrasive and/or corrosive applications, the screw and the pump body can be supplied with special coating for better wear and corrosion resistance.

Roto also undertakes skid mounted pumping systems complete with piping and instrumentation.



Shaft Sealing

These pumps can accommodate various types of shaft sealings like soft gland packing, single unbalanced, balanced and double mechanical seals. Options are available for pumps fitted with mechanical seals conforming to API 682 standards and various flushing and quenching plans.

Replaceable Liner

Renewable liners are standard feature. They extend the service life of the pumps and also minimise the maintenance cost over a long period.

Screw Profiles

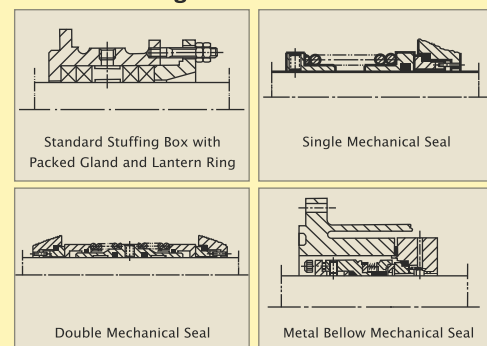
Unique double profile of the screw flanks delivers a higher efficiency. The screw flanks are integral with the shaft. Various pitch sizes are available to offer optimised flow rates with high volumetric and mechanical efficiencies. These screws are also suitable for high pressure applications.

Sealing Options

SOFT GLAND PACKINGS : Aramid packing -impregnated with PTFE High Temperature Resisting Lubricants • Lubricated PTFE Yarn Packing • Graphited Impregnated Glass Yarn Packing Lubricated with Mineral Oil • Lantern ring optional.

MECHANICAL SEAL : • Single coil Elastomer bellow Seals • Single coil Unbalanced Unidirectional/Bidirectional • Lug Driven • Balanced Seals • Double Seals • Metal Bellow Seals • API 682 compliant Cartridge Seals • Non API Cartridge Seals • Various API flushing & Quenching plans.

Shaft Sealings



DESIGN VARIANTS



Horizontal External Bearing Pumps

Performance Data

Capacity 500 M³/Hr
 Temperature 350° C
 Pressure 40 Bar
 Viscosity upto 1,00,000 Cst

These pumps are available in standard foot mounted & centre line mounted configuration with or without steam jacketing, sump heating, electrical/ steam tracing arrangement as an option.



Horizontal Internal Bearing Pumps

Performance Data

Capacity 500 M³/Hr
 Temperature 100° C
 Pressure 40 Bar
 Viscosity upto 10,000 Cst

These pumps are available in standard foot mounted configuration with sump heating arrangement as an option.



Vertical Pumps

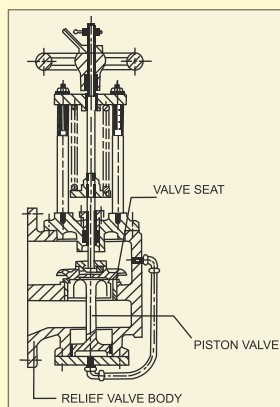
Performance Data

Capacity 500 M³/Hr
 Temperature Internal Bearing upto 100° C
 External Bearing upto 350° C
 Pressure 40 Bar
 Viscosity Internal Bearing upto 10,000 Cst
 External Bearing upto 1,00,000 Cst

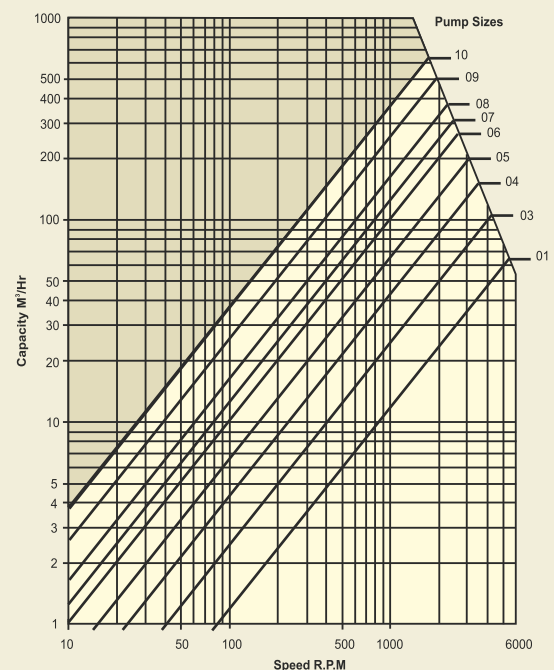
These pumps are available in standard foot mounted configuration with steam jacketing arrangement as an option.

BUILT-IN SAFETY RELIEF VALVE

Roto twin screw pumps being positive displacement type, should never be run against a closed delivery valve or any other delivery line blockage. To prevent such an occurrence for safety to the pump as well as the system, Roto Twin Screw Pumps incorporate as a standard, a safety relief valve capable of 100% bypass of fluid. Whenever low pressure pump applications are involved, pilot valve connection is provided to ensure 'chatter free' operation of the relief valve. A typical safety relief valve illustration is shown here.



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